PROC. ENTOMOL. SOC. WASH.
88(1), 1986, pp. 63–76

TAXONOMY OF THE *SEPEDON FUSCIPENNIS* GROUP (DIPTERA: SCIOMYZIDAE)

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Abstract.—The *Sepedon fuscipennis* group is herein established. A new species, *S. **gracilicornis***, and a new subspecies, *S. fuscipennis **nobilis***, are described. Included in this group are *S. f. fuscipennis* Loew, *S. floridensis* Steyskal new status, and *S. tenuicornis* Cresson. Illustrations, photos, and maps of the geographic distribution for the group are given.

This study involves the *Sepedon* taxa north of Mexico that lack hairs on the supraspiracular convexity of the metapleuron. These species are here established as the *Sepedon fuscipennis* group, which consists of four species and one subspecies. All are rather large brownish flies similar in size and color to *S. pacifica* Cresson and *S. praemiosa* Giglio-Tos. Adults of the genus all have a striking appearance, with long, porrect antennae and large, grasshopper-like hindlegs.

This paper is concerned with (1) the elevation of the subspecies *Sepedon fuscipennis floridensis* Steyskal to full species rank, (2) recognition of a new subspecies of *Sepedon fuscipennis* Loew, namely *Sepedon f. nobilis,* new subspecies, (3) the separation of *Sepedon gracilicornis,* new species, from *Sepedon tenuicornis* Cresson, (4) illustration of diagnostic characters and distribution maps of all taxa involved, (5) a key to the *Sepedon fuscipennis* group, and (6) a brief summary on recent biological studies.

Because of its large size, widespread distribution and relative abundance, there is more biological data on "*Sepedon fuscipennis*" than any other North American sciomyzid species. Its use for laboratory studies is further enhanced as it is a multivoltine species that overwinters as an adult (Berg et al., 1982). The discovery that sciomyzid larvae prey on aquatic pulmonate snails (Berg, 1953) was based partly on the larvae of this species, collected in marshes in Oakland Co., Michigan, in 1949, and in the Matanuska Valley, Alaska, in 1950–52. The specimens from both of those localities must now be assigned to *Sepedon f. nobilis.*

Biological studies were conducted by Neff and Berg (1966) on both adult and immature stages of *Sepedon fuscipennis.* Their material was obtained from the following widely separated areas: Alberta (Edmonton), Michigan (Cheboygan Co.), New York (Ithaca), and Kentucky (Breckinridge Co.). No geographic variations were noted. However, in light of present findings all but the Kentucky material must be assigned to *Sepedon f. nobilis.*

Population dynamics of adults and larvae of *Sepedon fuscipennis* were studied by Eckblad and Berg (1972). Eckblad (1973) studied the effects of predator and

Fig. 1. *Sepedon f. nobilis,* holotype male, taken before terminal segments were excised and placed in a genitalia vial on the pin beneath specimen. Photo by M. E. Badgley, University of California, Riverside.

prey density, and water depth on the number of snails killed per larva. Arnold (1978) estimated *S. fuscipennis* population density by the capture-recapture method and correlated oviposition rates with temperature and photoperiod at experimental marshes at Cornell University. The effects of temperature on longevity, fecundity, and developmental rates were observed by Barnes (1976). A broad study of phenology and voltinism in the Sciomyzidae (Berg et al., 1982) indicates that *S. fuscipennis* and other species of *Sepedon* are multivoltine and that they overwinter as adults. Berg and Valley (1985) report nuptial feedings in *S. fuscipennis,* with courting males utilizing anal secretions as well as dead snails to attract receptive females. All except the last of these recently published reports are now construed as pertaining to *S. f. nobilis* since the flies observed and tested were from sites in the vicinity of Ithaca, New York, well north of the belt of transition between this taxon and *S. f. fuscipennis.* Personal correspondence with C. O. Berg reveals that the *Sepedon fuscipennis* material in the Berg and Valley (1985) study was collected southwest of the junction of U.S. Rt. 22 and PA Rt. 61, Berks Co., Pennsylvania. The specimens I have seen from that locality collected by K. Valley are "intermediate specimens."

Molluscicide tests were conducted on *Sepedon fuscipennis* by McCoy and Joy (1977) to determine if certain species of marsh flies could survive levels of pesticides that readily kill snails. Being from Green Bottom Swamp, Homestead, Cabell Co., West Virginia, their material probably was *Sepedon f. fuscipennis.*

Extensive biological information is also available on "*Sepedon tenuicornis,*"

though it is less comprehensively studied. In the biological work by Neff and Berg (1966) specimens were taken from three localities in New York: Barrier Corners, Orleans Co.; Benson Ave., Minetto, Oswego Co.; and Inlet Valley, southwest of Ithaca, Tompkins Co. It is likely that the material used was a composite of *Sepedon tenuicornis* and *S. gracilicornis* n. sp. since both species are widely distributed in New York.

An in-depth laboratory study of *Sepedon tenuicornis* was made by Geckler (1971) in regard to (1) number and volume of snails killed per larva, (2) time to first kill, (3) snail vulnerability and larval success. Test specimens were from a small swamp east of Raleigh, North Carolina, and likely were *S. tenuicornis* rather than the more northerly distributed *S. gracilicornis.*

Voucher specimens retained from some of the above studies were made available for the present research. This study re-emphasizes the need in biological and ecological investigations for retention of adequate series of voucher specimens for taxonomic documentation. This problem is further treated by Knutson (1984).

Sepedon is separated from other genera of North American Sciomyzidae north of Mexico by the following combination of characters: (1) propleuron without strong bristle above the base of forecoxa, (2) vallar (subalar) bristles absent, (3) ocellar bristles absent, (4) postocellar bristles well developed, (5) midfemur with one or more distinctly larger anterior setae near midlength of femur, (6) frons with only one fronto-orbital bristle, (7) posterior crossvein arcuate.

Not all species of *Sepedon* have been assigned to groups. Presently recognized are three North American groups—*S. armipes, S. pusilla* and *S. fuscipennis.* The *Sepedon armipes* and *S. pusilla* groups, as established by Steyskal (1951), consist of smaller species with wing lengths usually less than 5.4 mm. The *S. armipes* group, which consists of eight species, is uniquely characterized by a deep indentation approximately midway on the ventral surface of the male hindfemur. Females of the *S. armipes* group all have simple hindfemora. Both sexes of the *S. pusilla* group, which consists of five species, have simple hindfemora and in gross aspect are generally darker than the *S. armipes* group. The abdomens are frequently almost black with bluish reflections, while those of *S. armipes* group are brown with little more than a trace of bluish reflection.

Members of the *Sepedon fuscipennis* group are readily separated from all other new world species of *Sepedon* by the absence of hairs on the supraspiracular convexity of the metathorax. In addition, all are relatively large brownish flies with wing lengths between 5.8 mm and 7.4 mm, and the medifacies are without hairs.

Key to the *Sepedon fuscipennis* Group

1. Second antennal segment approximately 2½ times as long as wide in lateral view 2
– Second antennal segment 4 or more times as long as wide in lateral view 4
2. Hindtibia with straw colored area in distal half, contrasting with dark brown before and after; male hindtibia with short hairs on dorsal surface. Male genitalia as in Figs. 6, 12 ..... *S. floridensis* Steyskal
– Hindtibia without contrasting area, more or less uniform brown; male hindtibia with hairs as long as width of tibia on dorsal surface 3

3. Frons with distinct velvety black parafrontal spot. Male genitalia as in Figs. 2, 7, 8 ..... *S. f. fuscipennis* Loew
– Frons usually with no more than a trace of a black parafrontal spot in specimens from Canada and western U.S., eastern specimens with darker spot. Male genitalia as in Figs. 3, 9, 10 ..... *S. f. nobilis* new subspecies
4. Second antennal segment approximately 4 times longer than wide, as in Fig. 18. Male genitalia as in Figs. 4, 14 ..... *S. gracilicornis* new species
– Second antennal segment approximately 5 times longer than wide, as in Fig. 17. Male genitalia as in Figs. 5, 13 ..... *S. tenuicornis* Cresson

Sepedon fuscipennis fuscipennis Loew
Figs. 2, 7, 8, 16, 19, 20

This species was described by Loew (1859: 299) and has come to be recognized as the most widely distributed *Sepedon* in North America. However, this study now limits its distribution to mainly southeastern United States. Its western limit is just west of the 100° longitude in southern Texas. The northern limit is just above the 40° latitude in Illinois and Indiana.

The syntype series of this species was examined through the courtesy of Alfred Newton, Museum of Comparative Zoology, Harvard University. The series consists of 1 male and 2 females. Each of the 3 specimens was mounted on a fine pin through the thorax and into a narrow strip of cork near one end. At the opposite end of the cork a much heavier pin was pinned through the cork and bears the specimen information labels. The labels on the pin associated with the male are as follows: (1) a blue label with a "25," (2) a white label with "Loew Coll.," (3) a white label with *fuscipenis* m. [misspelling], (4) a red label with "Type 13228." The females have only the above (2) and (4) labels.

Condition of syntypes.—Male: Wing length 6.2 mm, wings in perfect condition; left hindleg missing; left side of head has eye missing and some of the immediate skeletal material surrounding it; both right and left third antennal segments missing; remainder of specimen in excellent condition. Female #1: Wing length 6.5 mm, wings in perfect condition; extensive anterior damage, rudiments only of a head skeleton, no eyes or face; no propleura or mesopleura; no forelegs. Female #2: Wing length 5.9 mm, wings in perfect condition; left side of face and eye essentially missing; no right foreleg; part of propleura and mesopleura missing.

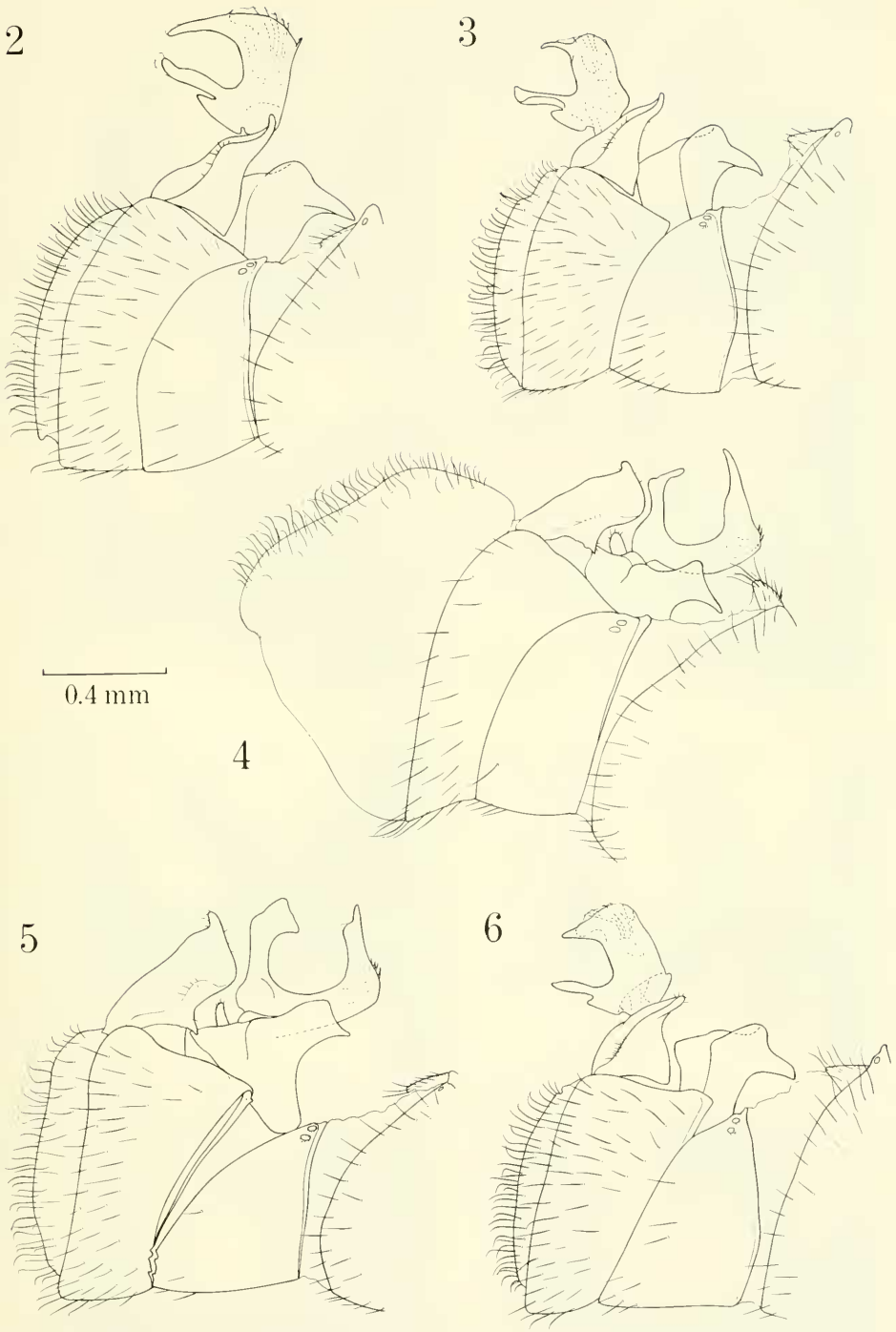
The terminalia of the male were dissected and the aedeagus is as it appears in Fig. 7. Collection data: Washington [District of Columbia], Osten-Saken. Type no. 13228. Museum of Comparative Zoology. The male is hereby designated as the lectotype.

Diagnosis.—Males are separated from *Sepedon f. nobilis* by aedeagal differences. Females are separated by their association with males and with the aid of the distribution map. Both sexes are further distinguished by a dense black parafrontal spot. Diagnostic features of the female terminalia have not been found.

Specimens examined.—415.

Sepedon floridensis Steyskal, New Status
Figs. 6, 12, 20

It appears justified at this time to elevate *Sepedon fuscipennis floridensis* to full species status. At the time of Steyskal's (1951) description *S. f. floridensis* was known only from a single male from Clewiston, Florida. At that time *S. f. fus-*



Figs. 2–6. Postabdomen, inverted. Sinistral view. 2, *Sepedon f. fuscipennis,* Oxford, Mississippi (CNC). 3, *Sepedon f. nobilis,* paratype, Norman Wells, Northwest Territories (CNC). 4, *Sepedon gracilicornis,* paratype, cercus extended, Hamburg, Livingston Co., Michigan (USNM). 5, *Sepedon tenuicornis,* Edgewater, Maryland (USNM). 6, *Sepedon floridensis,* Grassy Lake, Hempstead Co., Arkansas (USNM).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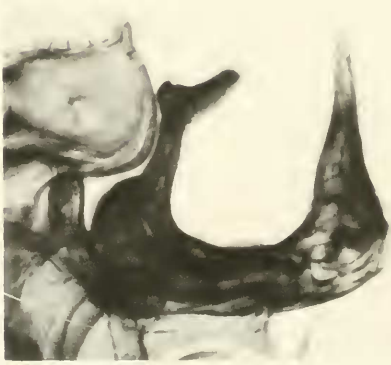
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cipennis had been reported only as far south as Chatham Co., Georgia, some 350 miles north of Clewiston. At present, the species are sympatric throughout almost their entire range of distribution. I have seen no intergrades between the two species. *Sepedon floridensis* is now known from the following states: Illinois, Tennessee, Kentucky, Maryland, South Carolina, Arkansas, Louisiana and Florida.

The holotype male was examined and agrees well with Figs. 6, 12. Collection data for the holotype: Clewiston, Florida, 20 January 1932, A. L. Melander, National Museum of Natural History, Type no. 101242.

Diagnosis.—*Sepedon floridensis* is easily separated from *S. f. fuscipennis* by comparison of the hind legs (see Figs. 15, 16): (1) the femur of *S. floridensis* is more slender, especially in the proximal one-third; also, the coloration is straw colored proximally, and dark brown distally, whereas *S. f. fuscipennis* is broader and uniformly tawny brown. (2) The tibia of *S. floridensis* has a straw colored area forming a band in the distal half contrasting with dark brown before and after, whereas *S. f. fuscipennis* is tawny brown, sometimes darkened, distally. (3) The hindtibia of *S. floridensis* males have short hairs on the dorsal surface while males of *S. f. fuscipennis* have long hairs. All *S. floridensis* have black parafrontal spots as do *S. f. fuscipennis*; however most western U.S. and Canadian *S. f. nobilis* are without parafrontal spots; at most, they are only lightly marked.

Specimens examined.—80.

Sepedon fuscipennis nobilis Orth, New Subspecies

Figs. 1, 3, 9, 10, 20

Holotype male.—Gross aspect brown. Head with broadly excavated frons with weak ridges. Parafrontal spot not present. Second antennal segment slightly more than twice as long as wide. Arista with dense, short, white hairs.

Thorax tomentose, dorsally with 2 longitudinal brown stripes, and 1 lesser median stripe. Prosternum with 2 setae on each side. Pleura brownish with sparcely scattered small setae, except metapleuron and hypopleuron bare. Scutellum with 2 apical bristles only.

Coxae light brown, tomentose. Legs uniformly brown. Ventral side of hindfemur with double row of heavy spines. Hairs moderately long on dorsal surface of hindtibia.

Wing length 6.7 mm. Membrane brownish, hyaline; costal margin and wing veins brownish. Area around crossveins lightly clouded.

Abdominal segments brownish, darker dorsally. Terminalia as in Figs. 3, 9, 10. Anterior process of aedeagus relatively small when compared to posterior process.

Allotype female.—Similar to holotype except for reproductive structures and relatively short hairs on the dorsal surface of the hindtibia. Wing length 6.6 mm.

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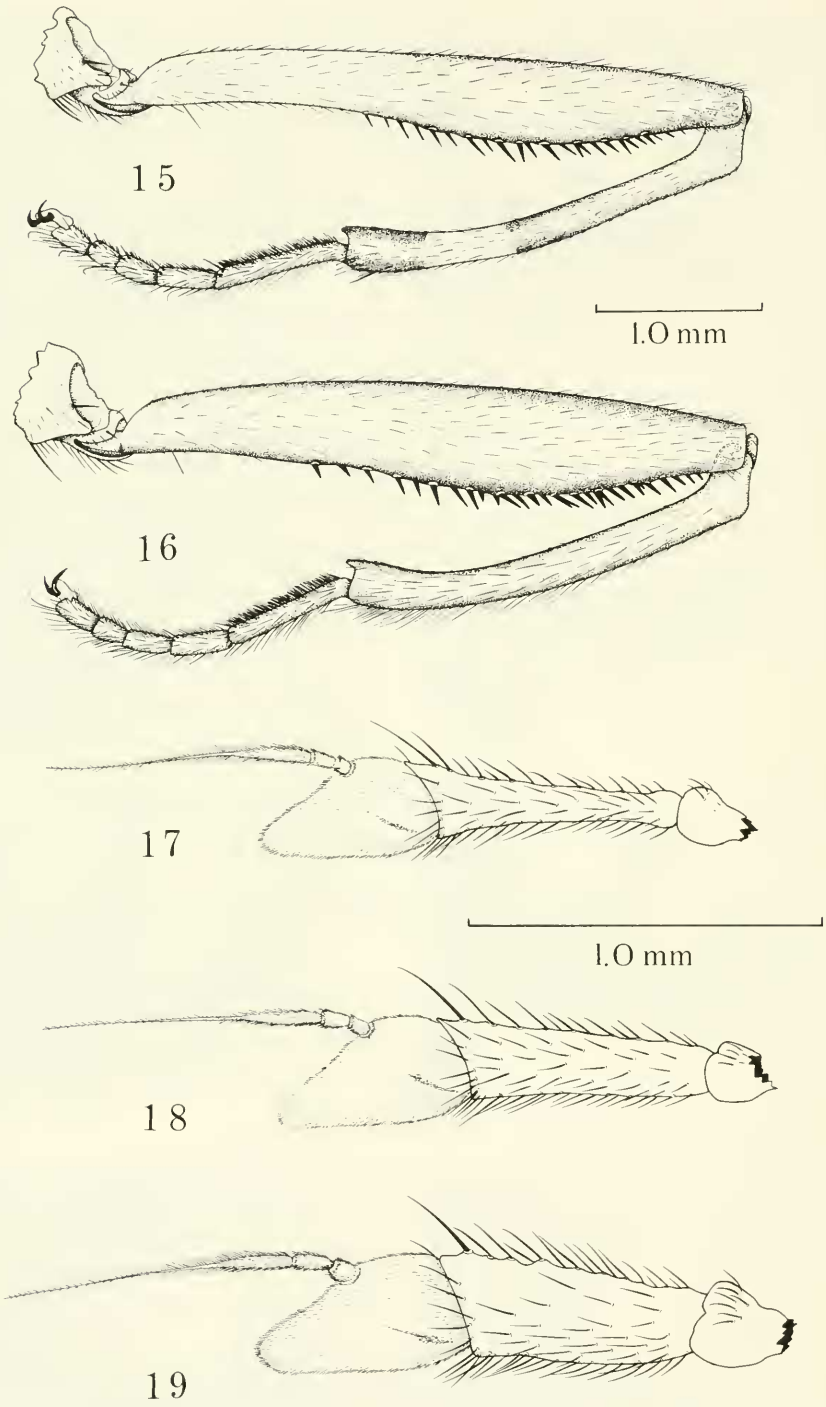
Figs. 7–14. Aedeagi, sinistral profiles. 7, *Sepedon f. fuscipennis*, lectotype (MCZ). 8, *Sepedon f. fuscipennis*, Victoria, Texas (USNM). 9, *Sepedon f. nobilis*, paratype, Norman Wells, Northwest Territories (CNC). 10, *Sepedon f. nobilis*, paratype, Oakland Co., Michigan (USNM). 11, *Sepedon fuscipennis* (intermediate specimen), Lafayette, Indiana (USNM). 12, *Sepedon floridensis*, Grassy Lake, Hempstead Co., Arkansas (USNM). 13, *Sepedon tenuicornis*, Oswego, New York (CU). 14, *Sepedon gracilicornis*, paratype, Mackinac Co., Michigan (CU).



Figs. 15–19. Left hindlegs. 15, *Sepedon floridensis,* Highlands Hammock State Park, Florida (CU). 16, *Sepedon f. fuscipennis,* Tampa (CU). Left antennae. 17, *Sepedon tenuicornis,* Oswego, New York (CU). 18, *Sepedon gracilicornis,* paratype, St. Mary's Pond, Oswego Co., New York (CU). 19, *Sepedon f. fuscipennis,* Laurel, Maryland (USNM).

Holotype.—♂, California, Sierra Co., 3.5 mi NW of Sierraville, Sept. 22, 1966, elev. 4900 ft., AS-538, T. W. Fisher-R. E. Orth. National Museum of Natural History, no. 101271.

Allotype.—♀, California, Sierra Co., 2 mi W of Sierraville, pasture N of hwy., Aug. 23, 1967, elev. 4940 ft., AS-628, T. W. Fisher-R. E. Orth. Deposited with holotype.

Paratypes. *CANADA*. BRITISH COLUMBIA: 6 mi W of Terrace, Gagnon Rd., June 23, 1960, J. G. Chillcott (2 ♀, 1 ♂), and June 24, 1960, G. E. Shewell (2 ♀, 1 ♂). MANITOBA: Whitewater Lake, 4 mi N of Whitewater, July 30, 1958, J. G. Chillcott (4 ♀, 2 ♂). NORTHWEST TERRITORIES: Norman Wells, June 25, 1969 (1 ♀), July 1, 1969 (1 ♂), July 2, 1969 (1 ♀), G. E. Shewell. SASKATCHEWAN: Waskesiu R., Aug. 1974, R. Coleman (2 ♀, 2 ♂). *USA*. CALIFORNIA: Sierra Co., 2 mi W of Sierraville, pasture N of hwy., elev. 4940 ft., Aug. 23, 1967, AS-628, T. W. Fisher-R. E. Orth (1 ♀, 7 ♂); Sierra Co., 3.5 mi NW of Sierraville, elev. 4900 ft., Sept. 22, 1966, AS-538, T. W. Fisher-R. E. Orth (1 ♂). IDAHO: Chatcolet, Aug. 15, 1915, A. L. Melander (4 ♀, 5 ♂). OREGON: Klamath Co., Klamath Game Refuge, elev. 4540 ft., Aug. 7, 1968, AS-743, T. W. Fisher-R. E. Orth (10 ♀, 11 ♂); Marion Co., 0.5 mi W of Mill City, Hwy. 22, elev. 900 ft., July 11, 1970, AS-858, T. W. Fisher-R. E. Orth (2 ♀, 5 ♂). MICHIGAN: Oakland Co., July 29, 1934, G. C. Steyskal (1 ♂). Deposited in Agriculture Canada, California Academy of Sciences, Cornell University, Kent State University, National Museum of Natural History, and the University of California at Riverside.

Variation.—Parafrontal spot varies from no mark to distinct black spot. Specimens from Canada and the west usually without a distinct spot. Those from eastern U.S., especially along the southern limits of distribution, have a definite black spot.

Etymology.—This species name is from the Latin nobil and means well known. It refers to its widely known distribution.

Distribution.—The known range extends from Alaska and Northwest Territories, east to Newfoundland, south to New York, west to Nebraska, New Mexico, and California. This subspecies range extends further north than any other species of the *Sepedon fuscipennis* group. Its northernmost location is Aklavik, Northwest Territories (68°15′ latitude).

Diagnosis.—The males of this subspecies are readily separated from *Sepedon f. fuscipennis* by aedeagal differences. Females can only be separated when collected with males by association. The distribution is nearly allopatric with *S. f. fuscipennis*. This simplifies most subspecies separations except where "intermediate specimens" are encountered. In the material examined, only once did *Sepedon f. fuscipennis* and *S. f. nobilis* occur together or overlap; that was at Jasper-Pulaski Game Preserve, Indiana, where one specimen of each was recorded. The illustrations of the terminalia of *S. f. fuscipennis* by Fisher and Orth (1983) are actually *S. f. nobilis*.

Specimens examined.—1019.

Sepedon fuscipennis, "intermediate specimens"

Figs. 11, 20

A series of intermediate specimens form a narrow distribution band at approximately 40° latitude. Collection sites were from Kansas (Lawrence) east through

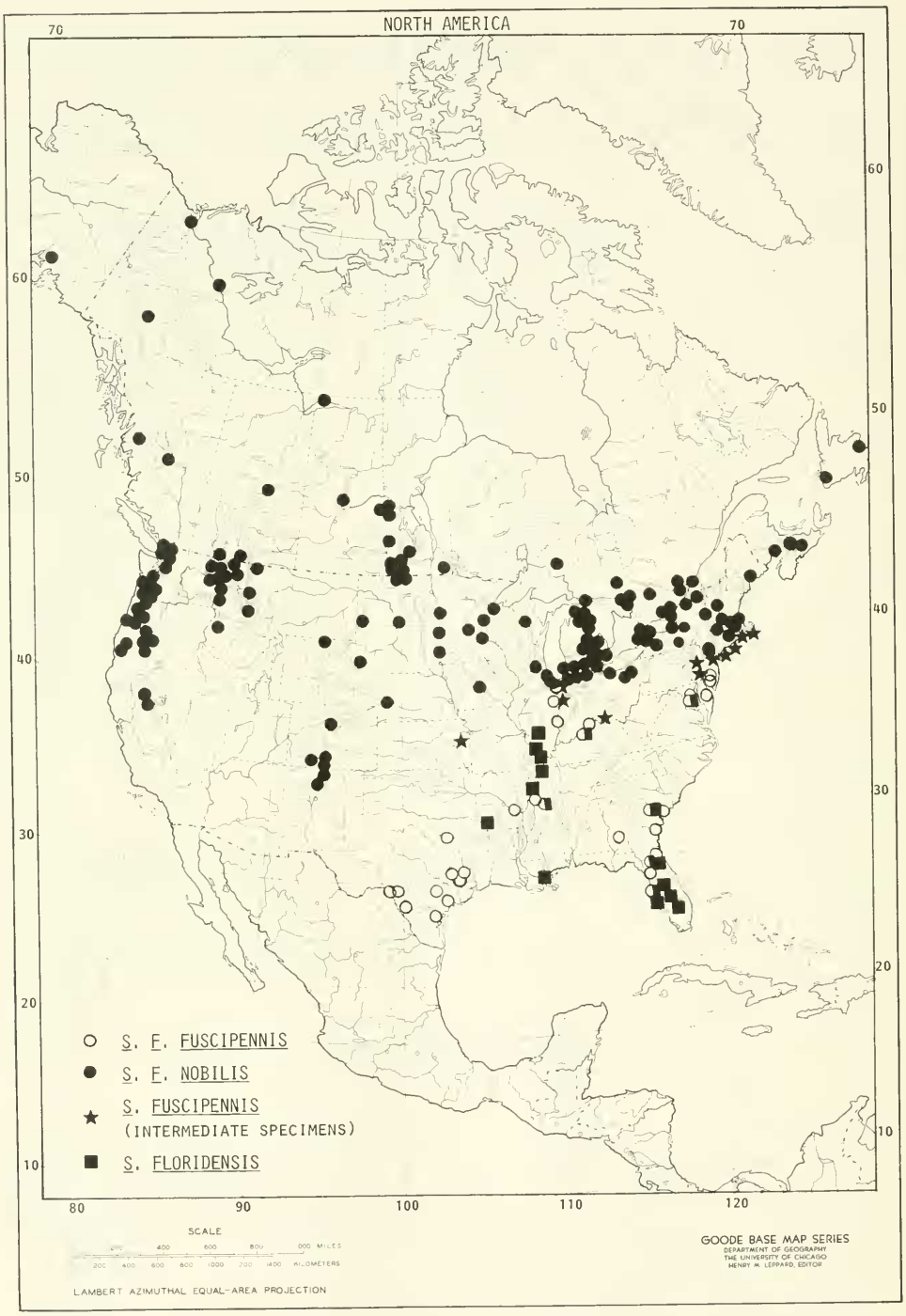


Fig. 20. Collection sites for *Sepedon f. fuscipennis, S. f. nobilis, S. fuscipennis* (intermediate specimens) and *S. floridensis.*

Illinois, Indiana, southern Ohio, Pennsylvania, New York (Long Island) to Massachusetts (Siaconset, Nantucket Is.). These specimens usually have a distinct black parafrontal spot. Males are separated by the terminalia as in Fig. 11. Females can only be separated when collected with males by association. It seems appropriate to recognize these as "intermediate specimens" rather than trying to place them to the nearest subspecies.

Specimens examined.—53.

Sepedon gracilicornis Orth, New Species

Figs. 4, 14, 21

Holotype male.—Gross aspect tawny brown. Head with broadly excavated frons with weak ridges. Parafrontal spot represented by light brownish, elongated, velvety stain. Second antennal segment approximately 4 times as long as wide. Arista with dense, short, white hairs.

Thorax tomentose, dorsally with 2 longitudinal brown stripes. Prosternum with a few scattered setae in lower half. Pleura pale brown with sparsely scattered small setae, except metapleuron and hypopleuron are bare. Scutellum with 2 apical bristles.

Coxae yellowish white, tomentose. Legs uniformly yellowish brown. Ventral side of hindfemur with double row of heavy spines. Hairs relatively short on dorsal surface of hindtibia.

Wing length 6.3 mm. Membrane brownish, hyaline; costal margin and wing veins brownish. Area around crossveins clouded, also a cloud around apex of vein R_3.

Abdominal segments brownish, darker dorsally. Terminalia as in Figs. 4, 14. The aedeagus, when viewed laterally, appears to have a long anterior horn or conical-like projection.

Allotype female.—Similar to holotype except for reproductive structures and parafrontal spot distinct, dark brown. Wing length 6.6 mm.

Holotype.—♂, Michigan, Livingston Co., E. S. George Reserve, May 28, 1944, George Steyskal. National Museum of Natural History, no. 101272.

Allotype.—♀, Michigan, Livingston Co., Hamburg, April 8, 1934, George Steyskal. Deposited with holotype.

Paratypes. *CANADA*. ONTARIO: 3 mi N Port Severn, May 18, 1959, J. G. Chillcott (3 ♀, 3 ♂); Six Mile Lake, 6 mi N Port Severn, May 1, 1959, J. G. Chillcott (1 ♂); Seeley Bay, July 27, 1952, G. C. Steyskal (1 ♀). QUEBEC: Beechgrove, May 15, 1961 (3 ♀), May 10, 1962 (1 ♂), J. R. Vockeroth; Beechgrove, May 11, 1965, collector ? (1 ♂); Beachgrove [sic], May 17, 1961, B. Poole (1 ♂). *USA*. CONNECTICUT: New Haven Co., Gulford, Rt. 146 nr. Moosehill Rd., June 19, 1968, K. Valley (1 ♀, 1 ♂); Old Saybrook, marsh, Sept. 5, 1968, K. Valley (1 ♀). OHIO: 1.0 mi N of Kent, May 24, 1962, B. A. Foote (1 ♂); 5 mi SE of Kent, July 4, 1965, W. Robinson (1 ♀, 1 ♂); Portage Co., Dollar Lake, Aug. 9, 1962, D. Miletich (1 ♂). IOWA: Hancock Co., Pilot Knob State Park, sphagnum bog, Sept. 23, 1969 (2 ♂), May 22, 1970 (1 ♀, 4 ♂), C. O. Berg. MICHIGAN: Alpina, July 30, 1953, G. C. Steyskal (1 ♀); Barry Co., Fish Lake, Aug. 4, 1959, R. J. Snider (1 ♂); Berrien Co., Stevensville, April 28, 1963, G. C. Eickwort (1 ♀); Livingston Co., Geo. Res., Sept. 4, 1938, G. C. Steyskal (1 ♂); Livingston Co., Hamburg, April 8, 1934, G. C. Steyskal (2 ♂); Mackinac Co., 7 mi NW of St. Ignace on Hwy. 2, June 20, 1968,

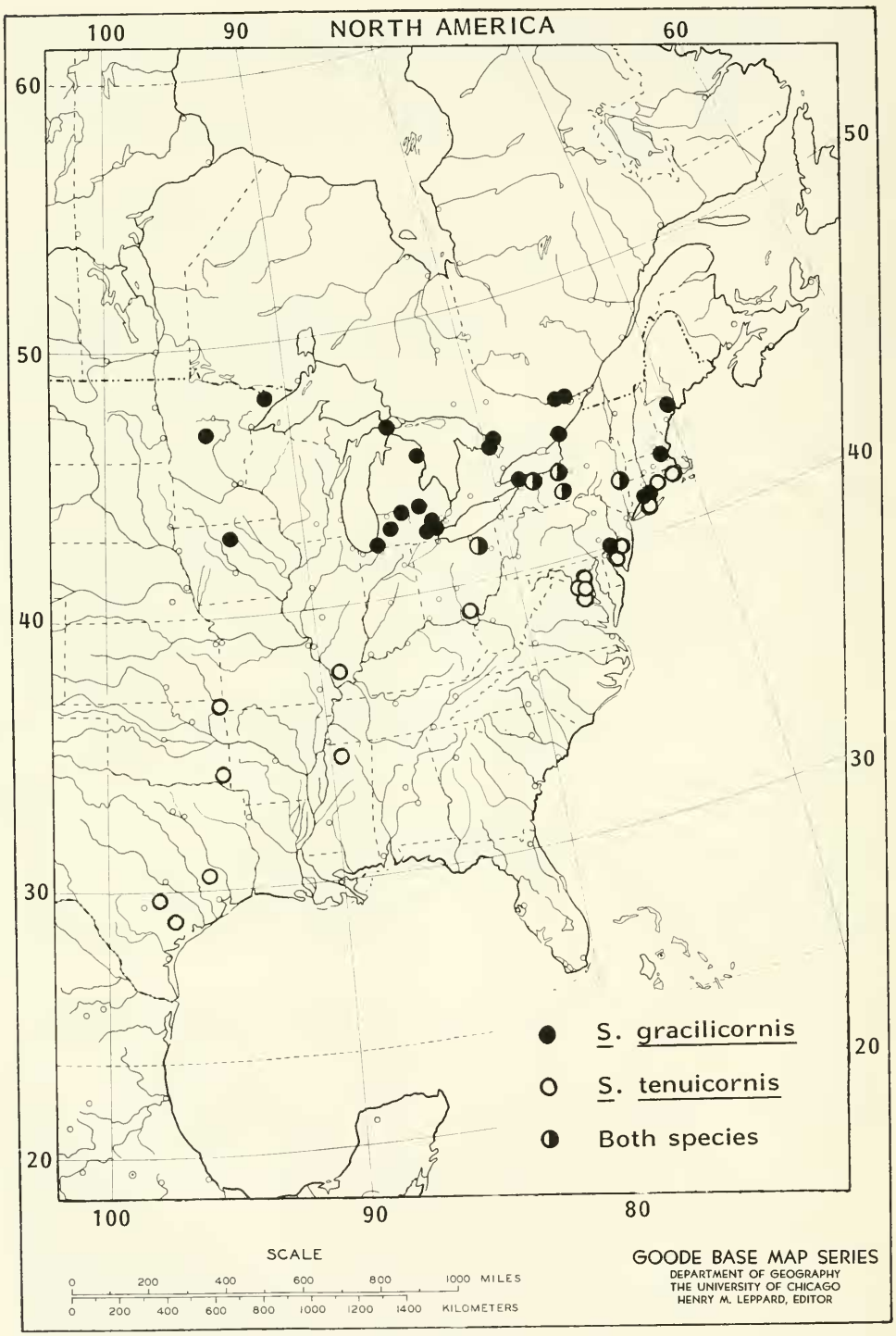


Fig. 21. Collection sites for *Sepedon gracilicornis* and *S. tenuicornis*.

C. O. Berg (3 ♀, 2 ♂); Shiawassee Co., T5N, R1E, Sec. 21, March 18, 1969, Norman T. Baker (1 ♂); Washtenaw Co., Little Portage Lake, Oct. 7, 1937, I. J. Cantrall (1 ♂). NEW YORK: Holly, July 10, 1981, L. Pechuman (1 ♂); Oswego Co., St. Mary's Pond, July 18, 1967, collector ? (1 ♂). Deposited in Agriculture Canada, Cornell University, Kent State University, National Museum of Natural History, and the University of California at Riverside.

Variation.—Parafrontal spot varies from light brown to black. Specimens from the southern limits of distribution have darker spots. Wing length 5.8–6.5 mm in males, 6.1–7.2 mm in females.

Etymology.—This species name is from the Latin gracil—slender + corn—horn; it refers to the anterior projection of the aedeagus as seen in Fig. 11.

Distribution.—The known range extends from Minnesota east to Maine including southern Ontario and Quebec, south to New Jersey, west to Iowa. The southernmost known locality of this species is Riverton, New Jersey (40.01°N latitude).

Diagnosis.—The intermediate size ratio, i.e. length to width, of the second antennal segment separates it from other members of the *S. fuscipennis* group. Frequently, when the terminalia have been cleared in preparation for viewing, the ultimate segment distends itself as in Fig. 4. *Sepedon gracilicornis* is a more boreal species than *S. tenuicornis,* from which it is here separated. The illustration of the terminalia of *S. tenuicornis* by Steyskal (1951) [1950] is actually *S. gracilicornis.*

Specimens examined.—65.

Sepedon tenuicornis Cresson

Figs. 5, 13, 21

Sepedon tenuicornis is found east of 100° longitude. The known northern limit of its distribution is New York near the southern shores of Lake Ontario. It is found as far south as southeastern Texas. It has not been recorded from extreme southeastern United States or Canada.

The holotype male terminalia were examined and agree well with Figs. 5, 13. Wing length 6.4 mm. Collection data for the holotype: Little Falls, District of Columbia, August 22, 1915, W. L. McAtee, National Museum of Natural History, Type no. 29507. I have also viewed 5 of the paratypes selected by Cresson from or near Plummer's Island, Maryland, and all compare well with the holotype.

Diagnosis.—The slender second antennal segment of *S. tenuicornis* separates it from all other members of the *S. fuscipennis* group. The segment is approximately 5 times longer than wide.

Specimens examined.—96.

Acknowledgments

I thank the following individuals and institutions for their assistance or loan of material: C. O. Berg, Cornell University, Ithaca, New York; L. Knutson and W. L. Murphy, Insect Identification and Beneficial Insect Introduction Institute, USDA, Beltsville, Maryland; G. C. Steyskal, Systematic Entomology Laboratory, USDA, % National Museum of Natural History, Washington, D.C.; B. A. Foote, Kent State University, Kent, Ohio; S. E. Neff, University of Louisville, Louisville, Kentucky; H. V. Weems, Jr., Florida State Collection of Arthropods, Gainesville,

Florida; H. J. Teskey, Biosystematic Research Institute, Agriculture Canada, Ottawa, Ontario. I express my gratitude to C. O. Berg and L. Knutson for kindly reviewing the manuscript and for their many helpful comments. A special thanks to T. W. Fisher, University of California Riverside, for his support and counsel.

Literature Cited

Arnold, S. L. 1978 [1976]. Sciomyzidae (Diptera) population parameters estimated by the capture-recapture method. Proc. Entomol. Soc. Ont. 107: 3–9.

Barnes, J. K. 1976. Effect of temperature on development, survival, oviposition, and diapause in laboratory populations of *Sepedon fuscipennis* (Diptera: Sciomyzidae). Environ. Entomol. 5: 1089–1098.

Berg, C. O. 1953. Sciomyzid larvae (Diptera) that feed on snails. J. Parasitol. 39: 630–636.

Berg, C. O. and K. Valley. 1985. Nuptial feeding in *Sepedon* spp. (Diptera: Sciomyzidae). Proc. Entomol. Soc. Wash. 87: 622–633.

Berg, C. O., B. A. Foote, L. Knutson, J. K. Barnes, S. L. Arnold, and K. Valley. 1982. Adaptive differences in phenology in sciomyzid flies, pp. 15–36. *In* W. N. Mathis and F. C. Thompson, eds., Recent advances in dipteran systematics: commemorative volume in honor of Curtis W. Sabrosky. Mem. No. 10, Entomol. Soc. Wash. 227 pp.

Eckblad, J. W. 1973. Experimental predation studies of malacophagous larvae of *Sepedon fuscipennis* (Diptera: Sciomyzidae) and aquatic snails. Exp. Parasitol. 33: 331–342.

Eckblad, J. W. and C. O. Berg. 1972. Population dynamics of *Sepedon fuscipennis* (Diptera: Sciomyzidae). Can. Entomol. 104: 1735–1742.

Fisher, T. W. and R. E. Orth. 1983. The marsh flies of California (Diptera: Sciomyzidae). Univ. Calif. Press, Bull. Calif. Insect Surv. 24: vii, 1–117.

Geckler, R. P. 1971. Laboratory studies of predation of snails by larvae of the marsh fly *Sepedon tenuicornis* (Diptera: Sciomyzidae). Can. Entomol. 103: 638–649.

Knutson, L. 1984. Voucher material in entomology: a status report. Bull. Entomol. Soc. Am. 30: 8–11.

Loew, H. 1859. Die nordamerikanischen Arten der Guttungen *Tetanocera* und *Sepedon.* Wien. Entomol. Monatschr. 3: 289–300.

McCoy, L. E. and J. E. Joy. 1977. Tolerance of *Sepedon fuscipennis* and *Dictya* sp. larvae (Diptera: Sciomyzidae) to the molluscicides Bayer 13 and sodium pentachlorophenate. Environ. Entomol. 6: 198–202.

Neff, S. E. and C. O. Berg. 1966. Biology and immature stages of malacophagous Diptera of the genus *Sepedon* (Sciomyzidae). V. Agric. Exp. Sta. Bull. 566: 1–113.

Steyskal, G. C. 1951 [1950]. The genus *Sepedon* Latreille in the Americas (Diptera: Sciomyzidae). Wasmann J. Biol. 8: 271–297.